Michael C. Habib. Toward Academic Library 2.0: Development and Application of a Library 2.0 Methodology. A Master's Paper for the M.S. in L.S degree. November, 2006. 49 pages. Advisor: David Carr

Recently, librarians have struggled to understand their relationship to a new breed of Web services that, like libraries, connect users with the information they need. These services, known as Web 2.0, offer new service models, methods, and technologies that can be adapted to improve library services. Additionally, these services affect library users' information seeking behaviors, communication styles, and expectations. The term Library 2.0 has been introduced into the professional language of librarianship as a way to discuss these changes. This paper works to establish a theoretical foundation of Library 2.0 in academic libraries, or Academic Library 2.0.

Headings:

College and university libraries/Aims and objectives

Internet/College and university libraries

TOWARD ACADEMIC LIBRARY 2.0:
DEVELOPMENT AND APPLICATION OF A LIBRARY 2.0 METHODOLOGY

by
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A Master's paper submitted to the faculty
of the School of Information and Library Science
of the University of North Carolina at Chapel Hill
in partial fulfillment of the requirements
for the degree of Master of Science in
Library Science.

Chapel Hill, North Carolina

November 2006

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Table of Contents

TABLE OF CONTENTS **1**

CHAPTER 1: INTRODUCTION AND PURPOSE **2**

CHAPTER 2: WHAT IS LIBRARY 2.0? **4**

LOOKING BACK TO THE ROOTS 4
THE "CONFRONTATION" CRITICISM OF LIBRARY 2.0 5
THE "MEANING" CRITICISM OF LIBRARY 2.0 6
A DEFINITION PROPOSED 8

CHAPTER 3: INTRODUCTION TO WEB 2.0 ..... **11**

THE READ/WRITE WEB 12
THE WEB AS PLATFORM 15
THE LONG TAIL 16
HARNESSING COLLECTIVE INTELLIGENCE 17
NETWORK EFFECTS 19
CORE DATASETS FROM USER CONTRIBUTIONS 20
LIGHTWEIGHT PROGRAMMING MODELS 20

CHAPTER 4: LIBRARY 2.0 THEORY AND METHODOLOGY **22**

SERVICES BASED ON WEB 2.0 CONCEPTS 23
USING A WEB 2.0 SERVICE FOR PROVIDING LIBRARY SERVICES 24
SERVICES IN RESPONSE TO CULTURAL EFFECTS OF WEB 2.0 25
SERVICES IN RESPONSE TO ENVIRONMENTAL EFFECTS OF WEB 2.0 26
SUMMARY 27

CHAPTER 5: ACADEMIC LIBRARY 2.0 ..... **29**

UNDERGRADUATE STUDENTS AND WEB 2.0 29
HARNESSING COLLECTIVE INTELLIGENCE TO SERVE LOCAL NEEDS 36
EFFECTS OF THE READ/WRITE WEB ON THE ACADEMIC ENVIRONMENT 38
ACADEMIC LIBRARY 2.0 39

CHAPTER 6: CONCLUSION AND FUTURE WORK **43**

BIBLIOGRAPHY **45**

Chapter 1: Introduction and Purpose

Recently, librarians have struggled to understand their relationship to a new breed of Web services that, like libraries, connect users with the information they need. While a few outside observers have proclaimed the death of libraries as a result of this new competition, it is clear that libraries continue to offer unique and valuable services to their communities. These services, known as Web 2.0, do have effects on library services. They offer new service models, methods, and technologies that can be adapted to improve library services. Furthermore, because of widespread use of these services, there are cultural changes affecting library users' information seeking behaviors, communication styles, and expectations. The term Library 2.0 has been introduced into the professional language of librarianship as a way to discuss these changes. What Library 2.0 is and what it means are still under constant discussion in the biblioblogosphere (world of librarian blogging). This paper is designed to be part of that ongoing discussion.

Most early discussions of Library 2.0 revolved around public library services. Now that the term has gained traction, it is being discussed in the academic sphere as well. This paper works to establish a theoretical foundation of Library 2.0 in academic libraries, or Academic Library 2.0.

To accomplish this, Chapter 2 will present a brief history of the term Library 2.0 and a definition grounded in its roots in Web 2.0 will be offered. Then, Chapter 3 will introduce the core concepts of Web 2.0. Chapter 4 will propose a general theory of

Library 2.0, which is itself a methodology for determining the effects of Web 2.0 on library services. Finally, Chapter 5 will apply this methodology to academic libraries and a number of theories and services will be proposed. Chapter 6 will then propose a project to continue development of Academic Library 2.0 theories and practices.

Chapter 2: What is Library 2.0?

Looking back to the roots

The term Library 2.0 was introduced by Michael Casey in September 2005. To this day, Casey continues to be one of the most outspoken advocates of the Library 2.0 concept. Additionally, the British ILS vendor Talis took an early interest in promoting the term (Miller, 2005; Chad & Miller, 2005; Miller, 2006). The term was exposed to a wider audience when Michael Stephens discussed Library 2.0 on the ALA's Techsource Blog. Other major voices in the discussion of Library 2.0 include Jenny Levine, John Blyberg and countless other librarian and library student bloggers (Library 2.0, 2006). After over a year of discussion, it appears that the term has received a stable place in the professional discourse. However, there still is a good deal of disagreement over both the meaning and value of the term. In the only peer-reviewed article published on the topic, "Library 2.0 Theory: Web 2.0 and Its Implications for Libraries", Jack Maness explains:

> "A more exact definition and theory for Library 2.0 is necessary to focus discussion and experimentation within the community, and will be valuable in the implementation of new web-based services in the next several years." (2006)

Since the publication of his paper, there is still no agreed upon focused definition. At this point, the definition and relevance of Library 2.0 will be discussed and a preliminary definition proposed. For readers unfamiliar with Web 2.0 concepts the next chapter will provide the appropriate background.

The term "Library 2.0" has evoked controversy. The critiques typically fall into two categories. Each of these will be addressed in context and an answer to each of the

criticisms will be proposed. This exercise will uncover weaknesses in some of the current definitions of Library 2.0. The two categories of criticism are:

1. The term "Library 2.0" is confrontational in that it declares, or implies, all prior library services obsolete and in need of replacement.

2. The term "Library 2.0" is meaningless in that it provides nothing new to the professional discourse. It essentially means nothing more than progressive librarianship.

The "Confrontation" Criticism of Library 2.0

Many librarians believe the term is confrontational because they have taken the 2.0 as a declaration that there was an obsolete Library 1.0 that needs to be replaced. First, it suggests of a misunderstanding of how the "2.0" has different origins, and thus different meanings in the two terms, Web 2.0 and Library 2.0. As will be discussed in the next chapter, the term Web 2.0 was created to describe the differences between second and first generation web applications. This language makes it apparent that Web 2.0 is an evolution of Web 1.0. In fact, by using version numbers to describe this occurrence, it is made clear that Web 2.0 is an updated version, not an entirely new "application". Web 2.0 defines itself as one subset of the Web that is evolving from an earlier Web subset. However while Library 2.0 can, and should, be extended beyond web services, its origin lies in the term Web 2.0 and related changes in web services. Consequently, the use of 2.0 in the case of Library 2.0 should not be taken to represent an entirely new generation of library services, but instead to represent a subset of new library services that are occurring because of the changes brought on by Web 2.0 services. Thus the "2.0" in Library 2.0 signifies the term's relationship to Web 2.0, while the "2.0" in Web 2.0 signifies its differences from Web 1.0. Another way to understand

this distinction is through an analogy. If Library 1.0 is to Web 1.0 as Library 2.0 is to Web 2.0, then Library 1.0 would describe how libraries adapted to the Web prior to Web 2.0 services. Consequently, Library 1.0 would itself describe only a subset of library services as opposed to all pre-Library 2.0 services.

A second reason that some librarians have taken a reactionary stance against the term Library 2.0 is because it has been described and defined as disruptive by many of its proponents. This rhetoric appears to have occurred largely as a way to force laggards into realizing the importance of how both Web 1.0 and Web 2.0 are changing the way many library services are and should be provided. Unfortunately, this way of describing Library 2.0 has often obscured the value of the term to those who in principle agree with what it represents. To step back and look at this rhetoric more carefully, as disruptive as it may be, Library 2.0 services are clearly built upon and beside existing library services and values. If this were not the case, the term library would be dropped altogether. It is at this point that the second reason for distrust of the term comes to light.

The "Meaning" Criticism of Library 2.0

Other critics argue that, apart from the buzz, Library 2.0 has no meaning beyond the already well established user-centered approach that has long been applied by progressive librarians. Much of this comes from the imprecise language with which Library 2.0 has been described. There are two ways that imprecise language has obscured the value of the term Library 2.0. The first occurs when necessary attributes of Library 2.0 services are referred to as the definition. For example, Michael Casey and Laura Savastinuk offer the following definitions in their article on in Library Journal:

> The heart of Library 2.0 is user-centered change. It is a model for library service that encourages constant and purposeful change, inviting user participation in the creation of both the physical and the virtual services they want, supported by consistently evaluating services…
>
> …What makes a service Library 2.0? Any service, physical or virtual, that successfully reaches users, is evaluated frequently, and makes use of customer input is a Library 2.0 service. Even older, traditional services can be Library 2.0 if criteria are met. Similarly, being new is not enough to make a service Library 2.0. (2006)

While the rest of the article focuses primarily on technological changes brought on by Web 2.0, taken at face value, this definition appears to promote the same user-centered approach to services that has been practiced by progressive librarians for years. While there are some librarians resistant to change and insulated from the outside world, there have always been innovators pushing the limits of library services. Consequently, there must be more to Library 2.0 than what is presented in this definition. The part of the definition that states "inviting user participation in the creation of both the physical and virtual services" has its roots in Web 2.0 concepts, but that is not clear by this definition. It is important to note this definition is taken out of context and that the authors work to explain the background that brought them to this conclusion. However, without including the thought process between the background and the definition, what is new about Library 2.0 is lost. Were these aspects of Library 2.0 stressed, the concept's value as a unique service model might become clear. Only once this unique aspect of Library 2.0 is solidly understood, do the derivative principles make sense.

The second way that imprecise language has confused this discussion is by conflating Web 1.0's effects on libraries with Web 2.0's effects. One of the primary reasons this seems to occur is the previously discussed different origin of version numbers in the terms Web 2.0 and Library 2.0. If Library 2.0 is to be a useful concept for

adapting library services to changes brought on by Web 2.0, then it must somehow be distinguished from changes brought on by the web in general. One example of this confusion is the following definition proposed by Ken Chad and Paul Miller in the Talis whitepaper, "Do Libraries Matter? The Rise of Library 2.0":

> Library 2.0 is a concept of a very different library service that operates according to the expectations of today's library users. In this vision, the library makes information available wherever and whenever the user requires it. (2005)

However, Web 1.0 presented this need and many library services have been designed to meet it. OPACs, online article databases, and 24/7 Virtual Reference services already provide such access. While many of these services are not yet compatible with handheld devices, adding this ability would be meeting a need brought on by the web in general and not Web 2.0. Making an OPAC accessible from a mobile phone wouldn't change the nature of the service. Instead it is simply updating it to remain compatible with current technology. This particular distinction will be discussed further in the next section. One can learn more about the backlash against broader definitions of Library 2.0 by reading Walt Crawford's piece "Library 2.0 and 'Library 2.0'" (2006).

A Definition Proposed

To make the term Library 2.0 understandable to a broad audience and directly applicable to how new services are developed, it is important to uncover the defining attributes of the term. In so doing, the differences between Library 2.0 and other new services can be clarified. This clarification will lay a solid foundation for developing Library 2.0 services. To uncover the defining attributes of the term, it is helpful to start from the beginning and analyze the origins of the term. Library 2.0 can be broken down into two parts, "Library" and "2.0". Seeing as the 2.0 comes directly from the term Web

2.0, it is clear that the term roughly describes the relationship between Web 2.0 and libraries. Worth noting is that Library 2.0 also borrows concepts from Business 2.0, which preceded Web 2.0. However that relationship lies outside the scope of this paper. Continuing with the analysis of Library 2.0 and Web 2.0, to have added value, Library 2.0 must have meaning above and beyond either of its parts. In other words, Library 2.0 cannot be defined solely by characteristics that are also characteristics of either Libraries or Web 2.0 if the combination of the characteristics does not create a unique concept. Consequently, Library 2.0 must describe a unique service model that occurs when libraries take Web 2.0 services into account. To determine this added value, the following definition based on the above argument is proposed.

> Library 2.0 describes a subset of library services designed to meet user needs caused by the direct and peripheral effects of Web 2.0.

This definition explains that Web 2.0 precipitates changing user needs and that Library 2.0 services meet these needs. This definition includes all implementations of Web 2.0 methodologies and technologies by libraries. However, by defining library services in terms of user needs, it leaves open the possibility that some Library 2.0 services may not implement Web 2.0 methodologies or technologies. However, the above clarifies that Library 2.0 only describes services responding to the user needs brought on by the effects of Web 2.0 services. This limits the definition to exclude library services meeting needs brought on by Web 1.0 or other non-Web 2.0 technological advancements.

Furthermore, this defines Library 2.0 as different from Web 2.0. Library services which directly apply Web 2.0 methods in the Library 2.0 setting are still a unique subset of Web 2.0. This subset is special because Web 2.0 focuses largely on information based services, which makes it of particular interest to the library profession. More

importantly, Web 2.0 is primarily a commercial term that is framed with a profit motive in mind. However, when Web 2.0 methodologies and technologies are applied to libraries, the conversation is reframed around providing quality library services. Additionally, Library 2.0 includes services which are not themselves Web 2.0, but instead responses to effects of Web 2.0. In these ways, the definition both narrows Library 2.0 to a subset of Web 2.0 and also widens it to a include non-Web 2.0 services.

Because this definition proposes a causal relationship between Web 2.0 and Library 2.0, it is important to step back and examine Web 2.0 before proceeding to develop a theory of Library 2.0. Consequently, Chapter 3 will introduce the key concepts of Web 2.0. Then in Chapter 4, a general theory of Library 2.0 will be proposed by examining what effects Web 2.0 concepts have on library user needs.

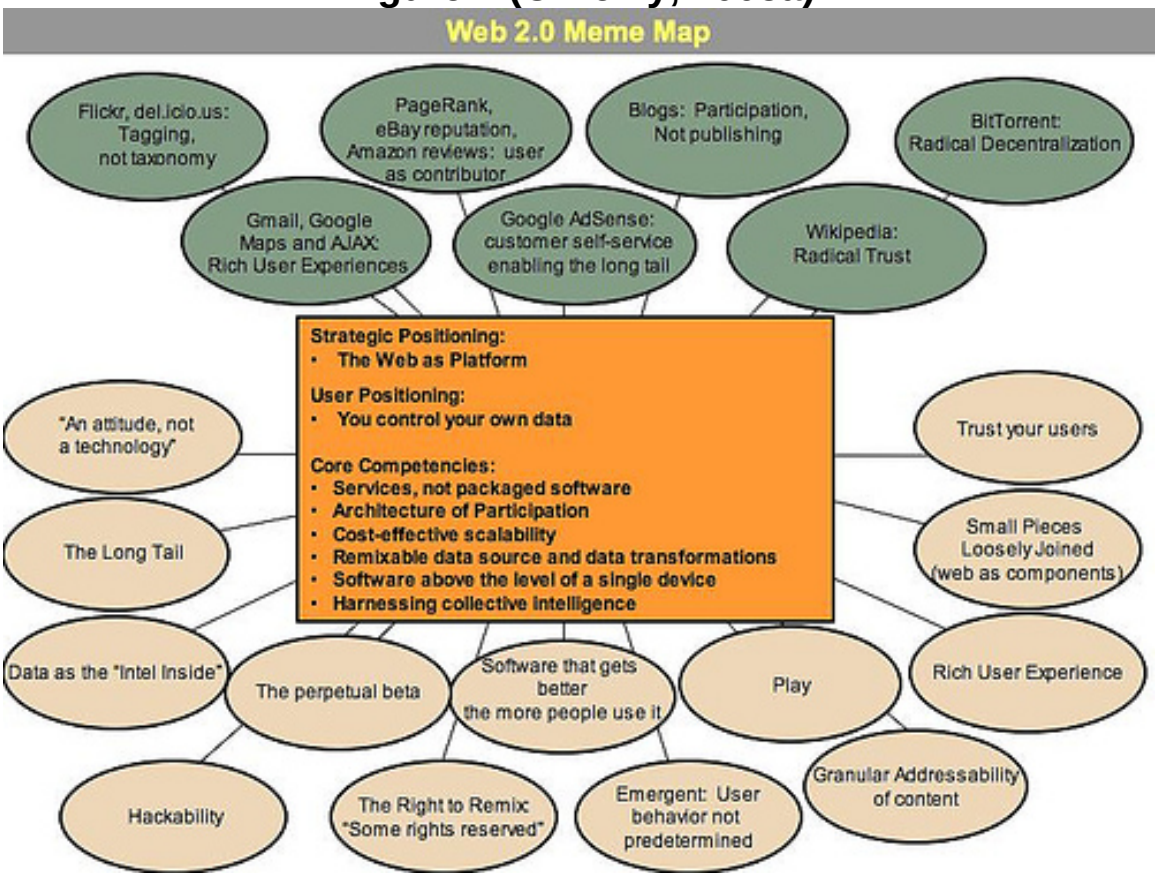
Chapter 3: Introduction to Web 2.0

Before proposing a theory of Library 2.0, it is important to gain a solid understanding of Web 2.0 and its related principles. Unfortunately, similar to Library 2.0, there have been many competing definitions of Web 2.0. To see why this confusion occurs, one need look no further than the origins of the term. In "What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software", Tim O'Reilly explains that Web 2.0 was originally formulated as a way of understanding how the most successful Internet companies differed from their peers (O'Reilly, 2005a). A list of the concepts, methods, and technologies which set these companies apart was then drawn up. The resulting list was defined as Web 2.0. Consequently, the original definition of Web 2.0 was itself a list. Furthermore, while many of the items on the list are related to one another, there is no single theory uniting them. Figure 1 shows the meme map O'Reilly created to display these various concepts. For purposes of consistency, O'Reilly's terminology will be used. This Chapter will describe the key concepts and methods of Web 2.0 and then briefly describe some of the underlying technologies. Common examples from the web will be incorporated throughout the discussion. Once these key concepts have been articulated, it will be possible to determine the different types of effects that Web 2.0 has on libraries.

The first two concepts to be discussed are leveraged by all Web 2.0 services. Because of this, these two principles are foundational to many of the concepts to be

discussed later in this chapter. These concepts are the Read/Write Web and the Web as Platform.

Figure 1 (O'Reilly, 2005a)



The Read/Write Web

One of the primary characteristics of Web 2.0 services is that they take advantage of the Read/Write Web. The Read/Write Web is the term given to describe the main differences between New Media and Old Media. Old Media, including Web 1.0 sites, were defined by a one way broadcast (Gillmor, 2004). Traditional types of media such as newspapers, radio, and television, were distributed through media designed for a unidirectional information flow. However, the web was designed to support multidirectional information flows. Furthermore, traditional media are static, while the

internet can be dynamic. Once a page is printed on paper, it cannot be edited, but once a page is printed on the web, it can be edited ad infinitum. Because the Web is dynamic in this way and also designed for information to flow in all directions, it is possible to design tools which allow consumers of the web to alter and add to the pages they visit. This would include altering existing works or creating original works hosted on distant servers. As Web 2.0 services leverage the Read/Write Web in various ways, this concept and its related tools will be discussed throughout this section. To get an idea of how the read/write tools enable users unprecedented communication abilities, examples of two types of Web 2.0 services which epitomize the read/write web will be introduced.

Blogs are an excellent example of web services which incorporate read/write characteristics to foster conversation instead of broadcast. There are five features of blogs that have proven most interesting in this respect. First, as content management systems, blogs are easy to create and update. Furthermore, most are run on free blog software and many, like Blogger and Livejournal, are hosted on the servers of that software provider. Combined, these attributes encourage many new users to begin blogs. In fact, approximately 100,000 new blogs are created each day (Sifry, 2006). Second is the syndication aspect. Blogs consist of posts in reverse chronological order. Most blog software comes with a built in back end of RSS (Really Simple Syndication), which allow readers to subscribe to the blog with an RSS reader and receive new posts much as they would receive an e-mail. This allows users to keep up to date with new content as it is created. Worth noting is that RSS feeds are now integrated into many websites. Third are permalinks, or post pages. A permalink is an individual page where each post is stored by itself. Because each post has its own URL, it has made it possible for other

bloggers to link to individual posts from their posts, which in turn creates conversation. Fourth are trackbacks, or backlinks. A trackback connects a post on one blog back to a cited post on another blog. This places a copy of the citing post on the permalink page of the original post. Fifth and last is the comment feature. This allows readers to comment on a post. Like a trackback, comments appear below the original post on the permalink page. Different readers and the original author can then add commentary on the original post, or responses to earlier comments. Like RSS feeds, comments are being included on many other services as well. Collectively, these features enable conversation to occur between all combinations of authors and readers. This leads to a discussion of a second type of web service that epitomizes the connection between read/write tools and communication.

Social networking services, such as MySpace and Facebook have shown incredible popularity over the past few years (Alexa, 2006; Stutzman, 2006a). These sites are based on the premise that each user gets their own personal space where they can create a personal profile and connect with all of their friends in the community. In this way, users can connect to their friends' friends and communicate with large groups of friends at once. Like blogs, these sites make it very easy for users to create content and build in incentives to encourage frequent updates and interactions with other users. For example, MySpace not only includes blogging features, but also encourages the sharing of photos, music, and videos. Like blogging, these services are successful because they enable and encourage communication between end users. Now that the concept of the Read/Write Web has been established, the second concept underlying all Web 2.0 services will be discussed.

The Web as Platform

By their very nature, companies described as Web 2.0 conduct their core business on the Web. At one time, software developers were limited to developing robust applications for the desktop. However, new web technologies and business models have made it possible to develop applications that run in a web browser. This ability has been deemed using the "Web as Platform" and is different from traditional applications in a number of ways. Two of the main differences are what O'Reilly describes as the "End of the Software Release Cycle" and "Software Above the Level of a Single Device" (O'Reilly, 2005a). "End of the Software Release Cycle" is more commonly, though less precisely, referred to as "perpetual beta." The idea behind this is that web services need to be constantly updated, a concept that includes experimenting with new features in a live environment to see how customers react.

This cycle of feedback and response is possible on the web because software can be updated on the host servers as opposed to on individual computers, thus making new releases appear seamless to the end user. "Software above the level of a single device" refers to web applications that can run on any hardware and operating system platform that supports standards based web browsers. Consequently, it is possible to develop web services which can operate both on a desktop computer and a cellular phone. One last quality of the Web as Platform is that it allows for applications to leverage the web as a communication network. O'Reilly explains that Web 2.0 services are designed to "make the most of the intrinsic advantages of that platform (O'Reilly, 2005b)." This is often accomplished through using tools of the Read/Write Web. The concept of "The Long

Tail" highlights one way the read/write capabilities of Web 2.0 services explicitly build on the strength of the web.

The Long Tail

The Long Tail is a term introduced by Chris Anderson to describe how the web makes it possible to provide services to small niche groups (Anderson, 2004). To explain how it works, an example related to libraries will be introduced. Anderson uses a similar example in his article that coined the term. Originally, it was difficult to publish a book related to a very specific interest because its audience would be too limited to justify the publisher's investment. While university presses make it possible to produce books related to specific interests in academia, they are still relatively limited in scope. However, the web lowers the barriers for distributing a book related to a specific interest because it can empower writers to connect directly with international audiences interested in extremely narrow topics. To see why this is so, three reasons will now be discussed.

First, read/write capabilities of the web allow amateurs to publish and distribute their materials directly to the web for a minimal cost. This eliminates the need for a publisher, bookseller, or other sort of middleman and drastically lowers the barriers for entry into the marketplace. Before these capabilities were introduced, content producers were still largely dependent on middle-men to distribute their media on the web. It is important to note that the read/write web makes this possible for all types of traditional media, not just books.

Second, the web virtually eliminates barriers of space. It accomplishes this because the web is a virtually unlimited storefront. While a physical bookstore or library has real physical limitations to the inventory it can hold, a virtual bookstore or library can

hold a theoretically ever-expanding inventory because of the affordability of digital storage space and the ability of a visitor to explore any part of this space. Furthermore, geographic barriers are eliminated. No matter where in the physical world one logs on, the unrestricted web is the same. This allows writers to reach global audiences in a more efficient manner than possible with traditional media.

Third, the web helps connect people with others who have the same narrow interests. Search technologies can help users find content for which they are looking. However, Web 2.0 tools also automate ways to connect specific content with appropriate audiences. One way this is accomplished is through harnessing the collective intelligence of their users. In fact search itself is powered in this way.

Harnessing Collective Intelligence

O'Reilly (2005a) offers numerous examples of Web 2.0 companies harnessing collective intelligence. One exceptional example of the power of collective intelligence is Google's PageRank algorithm. Instead of evaluating the relevance of websites based solely on their content, PageRank examines how many links point to a page, and from what sites those links come. In essence, PageRank asks the entire web what is and is not important based on how sites link to one another.

Most of the other best examples of this phenomenon revolve around how Web 2.0 companies harness the collective intelligence of their users to gain an advantage over competition. Wikipedia is possibly the most extreme example of this. Because each user is encouraged to contribute, an increase in users yields an increase in contributions. This in turn creates better articles which attract new users. As a consequence, Wikipedia is constantly improved by its users, and as it gains new users and improves in quality, there

is less reason to participate in a competing project. A less extreme example of this phenomenon is Amazon.com's book review feature. By encouraging users to annotate book records with reviews early on, Amazon began to accumulate valuable data that their competitors did not have. Once Amazon attracted a critical mass of reviewers, there was little reason for existing or new reviewers to switch to another site. This example of harnessing the collective intelligence of one's users also demonstrates how very small markets, the previously discussed "long tail", can be served through encouraging customers to provide services to other customers. In this example, many books that would otherwise have little or no annotation now include valuable reviews by specialist reviewers. The example of Amazon will be discussed more fully when Library 2.0 is addressed.

Worth noting is that these same methods and the underlying technologies help consumers communicate to one another about products they buy and services they use. This has many cultural ramifications and is altering how some companies do business. The Cluetrain Manifesto put this phenomenon to words in 1999 (Levine, Locke, Searls & Weinberger). Utilizing the collective intelligence of users describes one method Web 2.0 services employ to continually improve based on user contributions. However, a service such as a social networking site does not necessarily need to harness collective intelligence to improve. For example, in a social networking service, each user adds value to the network regardless of whether it harnesses the collective intelligence of its users.

Network Effects

Network Effects are another way for Web 2.0 services to leverage the unique characteristics of the web to their advantage. In fact, Network Effects explain why additional contributors increase collective intelligence in these examples. Social Software researcher Fred Stutzman explains Network Effects as they relate to social software in the following:

> Stated quite simply, social technologies benefit from an economy that awards value to the service as more people join the service. This, of course, is the network effect; a network gains value as more people join the network. (2006b)

The easiest way to explain this concept is through examples. EBay is probably the most straightforward. EBay is an online auction house open to everyone. Each new buyer or seller on eBay increases the strength of the network by either increasing the inventory or adding another possible bidder. The network effect becomes obvious once a critical mass of users joins because if someone wants to sell something, they have to go to the marketplace with the buyers. If eBay has millions of users and a yard sale would attract 100 customers, then eBay is clearly a more likely place to sell one's goods. To gain a deeper understanding of this concept and how it applies to Web 2.0 service read "Metcalfe's Law Recurses Down the Long Tail of Social Networking" (Metcalfe, 2006), or Stutzman's evolving theory of the "Network Effect Multiplier" which applies Network Effect theory to social networks and Web 2.0 services (Stutzman, 2006b). However, the leveraging of Network Effects and collective intelligence only work because Web 2.0 services amass datasets through the process of collecting user contributions.

Core Datasets from User Contributions

As has already been discussed, the key method that Web 2.0 companies use to collect unique data sets is through user contributions. These contributions are then organized into databases and analyzed to extract the collective intelligence hidden in the data. To this point, only explicit contributions from users have been discussed. However, Web 2.0 companies also excel in collecting and analyzing customer actions. Amazon.com, for example, does not simply collect users' explicit contributions, but also generates suggestions based on both a user's own and other customers' past behaviors. Amazon tracks users and attempts to offer suggestions based on items viewed by customers. So if someone were to buy a piece of software, Amazon might suggest purchasing a book on using that software. Furthermore, the suggested book might be one that other users bought along with the software. More than likely, a book that is also highly rated by customers would come to the top of the list. An actual transaction such as this typically takes many more variables into account and entices the customer with additional intelligent offers based on the collective knowledge of all Amazon users. To review, users are encouraged to contribute data by giving users the ability to interact and engage with the site and one another. Users' explicit contributions and implicit actions are then collected, organized, and analyzed to extract collective knowledge that can be applied to the direct improvement of the site.

Lightweight Programming Models

The move toward database driven web services has been accompanied by new software development models that, in some cases, lead to greater flexibility. For example, O'Reilly explains that Web 2.0 often uses "lightweight programming models"

(2005a). This partly includes simple ways to loosely share and process datasets between partners. This enables mashups and remixes of data. The most common example of this idea is Google Maps. People are able to create mashups by combining the Google Maps data and application with other geographic datasets and applications. This is made possible by the provision of APIs (application programming interface). An API allows third parties, either through licensing or open, to create new ways to view or utilize datasets. These and other "lightweight programming models" allow independent developers to program their own additions or mashups, which in turn can be shared with other users. In this way APIs can allow users to function as developers. They are contributing to the read/write web through writing code instead of writing text. This also allows maximum leveraging of datasets.

Now that the key concepts and methods of Web 2.0 have been introduced, it is possible to begin analyzing how library services are effected by Web 2.0. The next chapter will examine these characteristics of Web 2.0 to see in what ways they affect library services.

Chapter 4: Library 2.0 Theory and Methodology

Before proceeding to develop a general theory of Library 2.0, it is important to review the conclusions of Chapters 2 and 3. Chapter 2 argued for a definition of Library 2.0 solidly rooted in its origins in Web 2.0. The proposed definition of Library 2.0 was:

> Library 2.0 describes a subset of library services designed to meet user needs caused by the direct and peripheral effects of Web 2.0.

Given this definition, Chapter 3 explored the concept of Web 2.0. It was determined that Web 2.0 originated as a list of characteristics of successful web properties. Combining this definition of Library 2.0 with the core concepts of Web 2.0, an expanded definition is now proposed:

> Library 2.0 describes a subset of library services designed to meet user needs caused by the direct and peripheral effects of Web 2.0 services leveraging concepts of the Read/Write Web, the Web as Platform, The Long Tail, harnessing collective intelligence, network effects, core datasets from user contributions, and lightweight programming models.

This definition of Library 2.0 is broad enough to account for all effects of Web 2.0 on the library world. One way Web 2.0 concepts and methods might affect libraries would be through direct application of these concepts and methods to library services. An example of this would be to allow user tagging in the OPAC. A second way Web 2.0 services might have an effect on library services is by direct use of Web 2.0 services to provide library services. This would include setting up an account with a commercial photo sharing site, such as Flickr, to share library photos with patrons. A third way Web 2.0 might affect libraries is through cultural or behavioral changes brought on by Web 2.0

services. An example of this would be promoting library events to young adults through a MySpace account. Lastly, Web 2.0 services might affect the environment in which libraries function. This would include changing information literacy courses to account for changes in the information landscape, such as Wikipedia muddling issues of authority. Worth noting is that library services designed to meet user needs brought on by Web 2.0 might not themselves implement Web 2.0 principles. While many of the above examples might appear obvious, there are also many examples which take more contemplation. Consequently, it would be helpful to have a theoretical framework to help derive actual services to deal with these effects.

One way to determine the effects of Web 2.0 on libraries is to take each of the seven principles of Web 2.0 and ask how it might cause each of the possible types of effects explained above. This would mean asking four sets of questions. Furthermore, many of these effects occur together, making it necessary to ask multiple sets of questions. The following sets are not meant to be all inclusive, but only a starting point. An example of each set will be provided using the examples articulated above.

Services Based on Web 2.0 Concepts

The first set of questions concerns implementing a library service based on a Web 2.0 concept. How might concept X be implemented to improve service Y or create service Z? What other concepts of Web 2.0 would such an implementation employ? Do any other services exist which use this concept in the same way? Are our users familiar with other services that use this concept? What user population could be served by this? What are the drawbacks of incorporating a service powered by this concept? To gain an understanding of how this concept might be applied, a hypothetical application follows.

How might the concept of harnessing collective intelligence be implemented to improve cataloging? Are there any other services using tagging to allow users to categorize items? Do our users use any services that incorporate tagging? What user population would be served by incorporating tagging in the catalog? Would the positive outcomes outweigh the negatives?

Using a Web 2.0 Service for Providing Library Services

The second set of questions concerns implementing a library service through use of an existing Web 2.0 service. What concept or concepts of Web 2.0 power this service? What services does it provide? This service utilizes concept(s) X and provides feature(s) Y; how might using this service improve services for our users? Could this service be used to improve or supplement service Y? Would use of this service provide our users with something beyond what the library already offers? Does it provide our users with something additional to the existing value of the service? Are our users using this service or similar services? What population would this service target? What drawbacks might arise from using this third party service? Would our use of this service utilize the Web 2.0 concepts inherent in the service? If so, the first set of questions should be also be applied. A hypothetical application of this questioning will now be presented.

Flickr utilizes all seven concepts of Web 2.0 services. Flickr enables users to contribute, organize, share, and discuss photos. Might Flickr be useful for posting photos of library sponsored events? This would allow users to discuss and share photos in ways that were previously unavailable. If enough of our patrons use it, there might be a network effect; what effects might that have? Should we teach our users how to use Flickr instead? Are our users familiar with Flickr or similar services which enable

commenting and tags? Which of our users are likely to use this service? What are potential drawbacks to hosting our photos on Flickr's servers and site instead of our own?

Services in Response to Cultural Effects of Web 2.0

While the first two sets of questions concern the direct effects of Web 2.0, the third and fourth sets of questions concern harder to identify peripheral effects. Set three concerns cultural changes including behavioral and habitual. In the *Internet and Everyday Life*, a number of early studies are presented which show how Internet use becomes closely connected to offline life (Wellman and Haythornwaite, 2002). Because many Web 2.0 tools are social or collaborative in nature, their effects often extend deeply into users' lives, affecting how people work, communicate, and socialize. Given this background, a core set of questions concerning these effects can be proposed. How are our users using services that employ X concept(s)? How are these services affecting our users' lives outside of the library? How do these services affect the information seeking behaviors and communication habits of our users? What other types of changes in user behaviors and expectations are occurring because of their use of services employing X concept(s)? How can we alter service Y or create service Z to meet this need? A possible application of this follows.

Teens are avid users of MySpace. How are they using it? Is it an extension of their offline social life? Is it their primary form of electronic communication? Is it used for planning face to face meetings? How much of their online time is spent at this site compared to the library web site? This site has built in features to invite friends to events. Maybe more teens would get the notifications about our events if they were posted in MySpace? Teens appear to be very honest and open on their profiles. Maybe

we could solicit more and better feedback by setting up a profile for the library? Are other populations we serve using MySpace?

Services in Response to Environmental Effects of Web 2.0

The fourth and final set of questions deals with peripheral effects on the environment in which libraries function. The primary way Web 2.0 services affect the library environment is through changing the information landscape. Because these services are data driven, they introduce entirely new types of information resources, information seeking behaviors, and user expectations. The following set of core questions is a good starting point for dealing with these effects.

How are services using concept X changing aspect Y of the environment in which libraries operate? How do Web 2.0 implementations of concept X alter the types of information to which users are exposed? How are information resources developed through concept X different from traditional resources? How does concept X effect the ways users interact with information resources? What are the positive and negative aspects of these new resources? What skills do users need to interact responsibly with these resources? What services would assist users to benefit from these new resources? An example application of this method of questioning follows.

Wikipedia employs the principle of collective intelligence toward the writing of an encyclopedia, a reference tool. Each article can be written by any number of unidentified authors. This method eliminates the traditional methods for determining authority. Wikipedia users are not only able to read articles, but also edit them. The idea powering Wikipedia is that a critical mass of users will pool their intelligence and edit out the improper information. It is difficult to tell which articles are correct and which

are filled with honest mistakes or partisan agendas. However, many articles are adequate starting points for research and offer citations to other resources on the web. Furthermore, the number of contributors makes it possible to publish articles on obscure and specific topics that would not be covered by a traditional encyclopedia. Also, this new type of editorial process is quick and can provide articles on current events more quickly than traditional resources. Users need to understand how Wikipedia is different from traditional reference works. They need to understand how it works, so they can assess accuracy. They also need to learn how to contribute appropriately. This would include a solid understanding of plagiarism and how their contribution might affect their identity. Maybe a course in how wikis work would be helpful?

Summary

The above presentation of core question sets explains how the proposed theory offers a method that can be applied to practice. However, it is also helpful to look at the basic structure of this method to determine which lines of questioning to pursue. The following chart (Figure 2) provides a visual cue from which to build questions. One can pick a general concept of Web 2.0 from the left column and a general category of library service from the right column and then ask each of the questions posed in the center. Such a brainstorming session, should provide the starting point for further pursuits. The same exercises could be performed by substituting Web 2.0 services for Web 2.0 concepts and adjusting the questions accordingly. Furthermore, when performing these exercises for a particular library, then it will be performed through the lens of that particular institution. One general aspect of most libraries is library type. Given that Library 2.0 services are designed to meet user needs, Library 2.0 services at public,

academic, school, and special libraries will all have unique user needs because of the different populations they serve. As an example of this method's effectiveness, chapter 5 will explore some examples of how this method can be applied in the academic library setting.

Figure 2: Library 2.0 Brainstorming Chart

Web 2.0 Concepts (X)	Effects/Questions	Library Services (Y)
Read/Write Web	What are the direct effects of concept X on service Y?	Cataloging
The Web as Platform	In what way might concept X be directly implemented to improve service Y?	Reference
The Long Tail	In what way might concept X be directly implemented to create a new library service?	Collection Development
Harnessing Collective Intelligence	What ways might Web 2.0 services employing concept X be used to improve service Y?	Library Instruction
Network Effects	How might Web 2.0 services employing concept X be used to create a new library service?	Marketing and Outreach
Core Datasets	What are the peripheral effects of concept X on service Y?	Children's Services
Lightweight Programming Models	What are the effects of concept X on users of Y library service?	Reader's Advisory
	Are users of Y service familiar with concept X?	Young Adult Services
	Are users of Y service familiar with Web 2.0 services implementing concept X?	???????
	How does use of Web 2.0 services employing X concept effect the information seeking behaviours, communication styles, and habits of service Y's users?	
	How does concept X change the environment service Y functions in?	

Chapter 5: Academic Library 2.0

This chapter will apply the methodology proposed in Chapter 4 to the academic library setting. Only select questions will be analyzed so as to demonstrate the value of the theory. The first part of this inquiry will focus on the largest population served by academic libraries, undergraduate students.

Undergraduate Students and Web 2.0

To begin, a number of questions related to undergraduates will be posed according to the proposed methodology. How are undergraduates using Web 2.0 services? What concepts are employed by those services? How does use of these services affect the information seeking behaviors, communication styles, and habits of undergraduates?

It could be argued that academic libraries are in a unique position to apply Web 2.0 concepts. Multiple studies by the Pew Internet & American Life Project have shown this age demographic to be most likely to participate in creating web content. It is frequently assumed that this is because they are "net natives," as many of them grew up with the Internet. A report from the Pew Internet & American Life Project was titled "Teen Content Creators and Consumers: More than half of online teens have created content for the internet; and most teen downloaders think that getting free music files is easy to do" (Lenhart and Madden, 2005). This title alone points out both the quantity of teens who have created content and the number able to find free music. Finding free

music normally involves using peer-to-peer software, which itself is a Web 2.0 concept. Among other findings, the report shows that teens are more likely to create and read blogs than are older demographics. In addition to these findings, an earlier report titled, "Content Creation Online" (Lenhart, Fallows, & Horrigan; 2006) determined that broadband users are more likely to create content as well. Therefore, in context of a typical residential college campus, an already active population is being given always-on broadband access, which further entices participation in Web 2.0 services. Assuming that teens of today will be university students of tomorrow, the typical student for the foreseeable future will be comfortable with Web 2.0 tools. Do teens continue to be power users of Web 2.0 tools when they enter college?

Most college curricula now require students to participate online. Even if students are not required to create websites for class, most are required to use course management software such as Blackboard or WebCT. While the dominant course management systems do not fully utilize the concepts of Web 2.0, they do incorporate read/write tools such as discussion forums and workspaces for online collaboration. Many colleges are now beginning to offer alternative solutions for online courses such as wikis.

Even more interesting, and more important, is the way freshmen at a residential school are introduced to new technologies. When entering college, freshmen appear to accept the current technology as the way it always was. This is important both for looking at how undergraduates currently use new Web 2.0 services, and because of the ease of integrating new services into college lifestyle. Two examples will be used to illustrate this point. First is Instant Messaging. Unfortunately, no hard data is available

to illustrate this point, but the author is able to speak from personal experience as a freshman in 1998. According to AOL.com, AOL Instant Messenger was first released in May 1997 (2006). To most Internet users, this was their first introduction to instant messaging. As an entering freshman in August 1998, AIM was overwhelmingly accepted by most students at this author's residential college as the primary form of communication. Because no one had been to college before, it was taken for granted that always-on broadband access and reliance on Instant Messaging were simply part of college life.

A more compelling and recent example of this phenomenon comes from Fred Stutzman's current studies of freshman Facebook usage at the University of North Carolina at Chapel Hill. Over the past few years, Stutzman (2005; 2006a) has used a web crawler to track freshmen usage of Facebook from the summer before entering school through their first academic year. While the data he has gathered is truly fascinating, only a few key highlights will be mentioned here. In the first year of his study, he found that by the first day of class, 85% of freshman had a Facebook account. He also found a strong and direct correlation between when accounts were created and orientation sessions held over the summer. Essentially, students were introduced to Facebook by their orientation leaders and consequently accepted it as part of college life. Stutzman also found that, by semester's end, 94% of freshman had accounts. A lot of the accompanying data shows that students were also very active users of Facebook. Furthermore, Stutzman (2006c) is developing a compelling theory of "Situational Relevance" to explain this data. It is his argument that students use Facebook because it helps them become oriented to their new environment. Entering a new environment,

where they do not know anyone and need to build a new social network, students embrace Facebook as a tool for learning about other students and navigating college life. In addition to nearly being universally adopted by undergraduates, Facebook is an excellent example of a Web 2.0 service.

Facebook is a highly successful social networking service designed for college students. Apart from demonstrating freshman adoption habits, Facebook provides specific clues as to how academic libraries might implement Web 2.0 services. Facebook implements most of the features and concepts relevant to Web 2.0. As a social networking service, network effects occur. With almost 100% of students using Facebook at many universities, the network effect is very strong. Furthermore, Facebook is powered by user contributions. Users not only create personal profiles, but are also encourage to upload and tag photos, to comment on one another's profiles and photos, to create groups, and to manage event invitations. New features are regularly added. Some of the newer features include a blogging service and a tool for sharing digital media. Given this integration of tools, users of Facebook are exposed to most of the typical types of Web 2.0 applications and thus most types of Web 2.0 concepts. Now that it has been determined that academic libraries serve a unique audience that both quickly adopts and frequently uses Web 2.0 services, it is possible to pursue further lines of questioning.

If students are already using services such as Facebook and Blackboard, how do these products fit into their lives? How does use of these services guide libraries in the process of developing new services or using existing Web 2.0 services? One approach to answering this question is to examine how these technologies already fit into student life

and then determine the library's role in this picture. Furthermore, because these services relate to students' offline lives, they too must be examined.

Figure 3: Academic Library 2.0 Concept Model, Basic

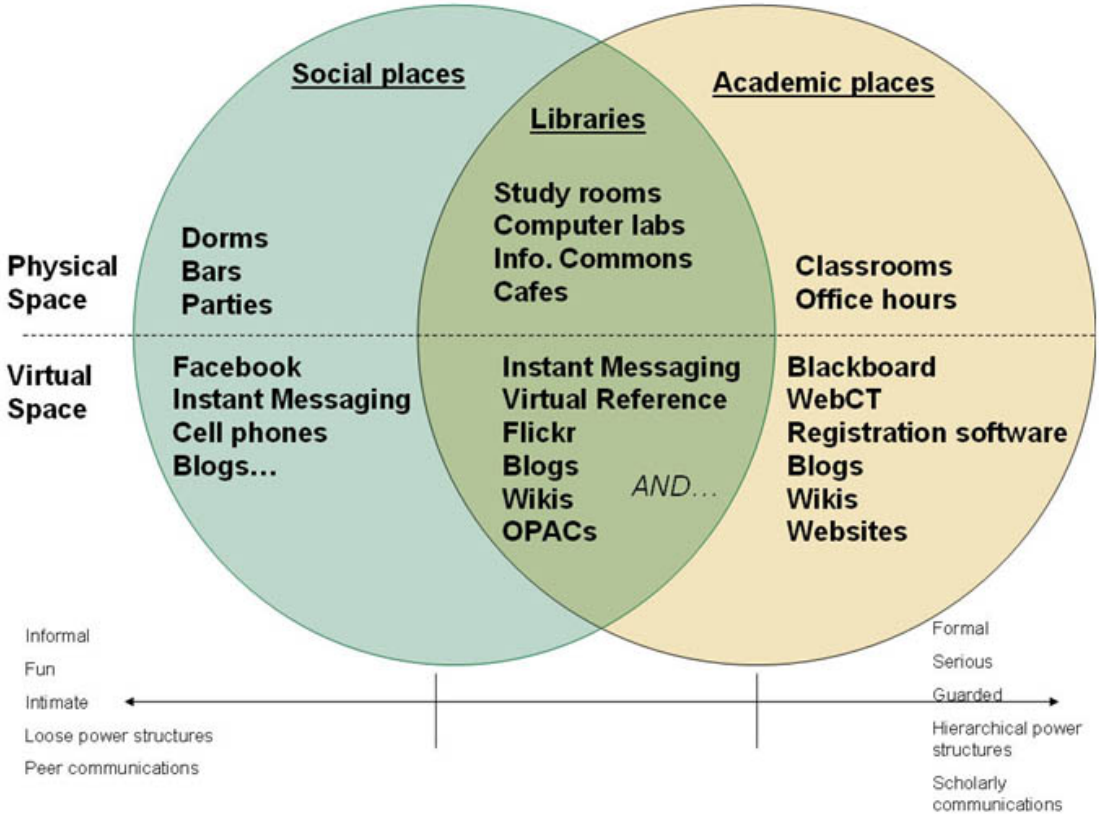


Figure 3 introduces one conceptual framework that applies this method. This model analyzes the library's position as a physical place in student life and then draws parallels with the library's place online. The model is based on the idea that most of student life is divided between the social and the academic and that physical libraries have traditionally provided a unique location that mixes the two. The bottom of the model displays the various spectra between social and academic places with libraries falling near the middle. One end is the strictly academic formal classroom. Here the professor is an authority to the student. At the opposite end is a party, a purely social

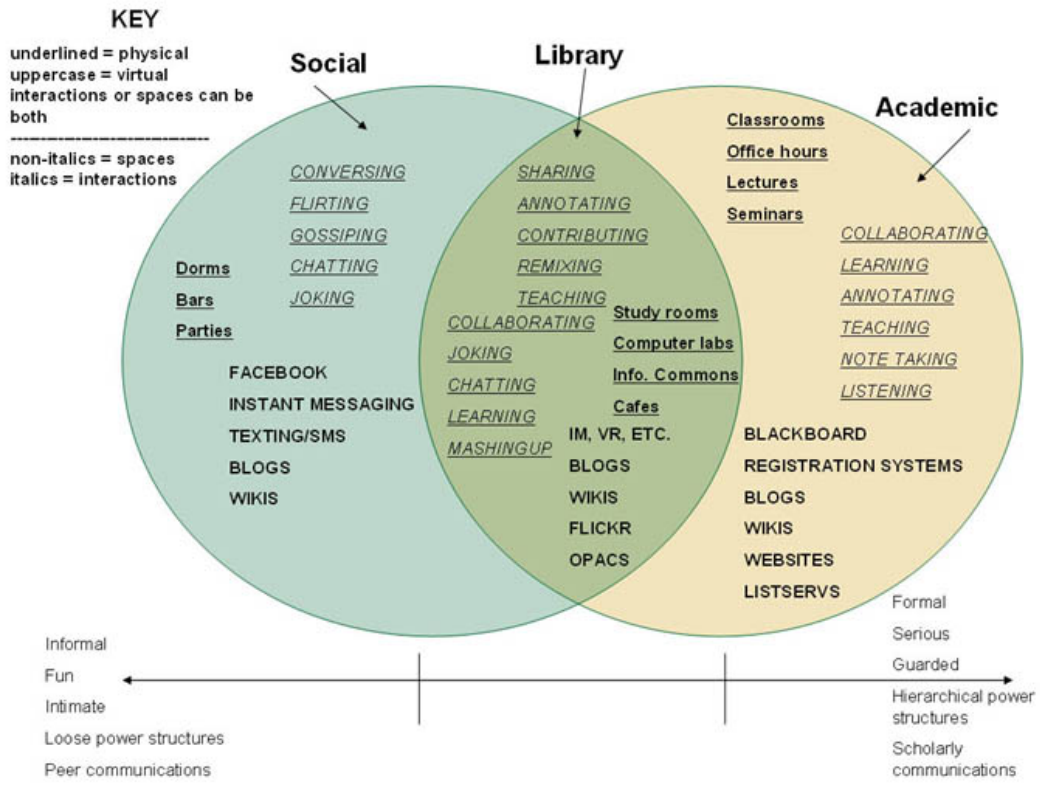
occasion. It could be argued that libraries have traditionally provided a place where students could collaborate on school work without the pressure of being watched by an authority figure, thus allowing them to socialize while they work. Of course, this space also provided students with whatever research materials and reference assistance they might need. Toward this end, librarians have traditionally tried to maintain strict patron confidentiality so as to keep the library a safe haven from authority. Furthermore, many academic libraries now provide popular materials collections to provide residential students with materials for pleasure reading, thus further blending the line between social and academic space. Recent trends in academic libraries have moved closer to blending this line by adding coffee shops, WiFi access, and Information Commons.

If one accepts that the physical library provides students with this blended environment, then one might ask, "How might the library provide a similar virtual space?" To find an answer to this question, this model creates a parallel spectrum describing a student's virtual life. At the academic end of the spectrum, lies course management software such as Blackboard. Similar to the classroom, this space is controlled by the professor and has the same authority structure. On the social end of the spectrum, is Facebook. Students traditionally think of this as a safe social place devoid of authority figures. This is demonstrated by the fact that students have recently been punished for information they post to Facebook. Stutzman's research demonstrates this feeling of safety (2005; 2006a).

Given this spectrum, what virtual place might the library provide for students? One possibility would be virtual group study rooms. Such a place might provide the read/write tools to enable students to collaborate remotely and asynchronously on course

projects. This space might also provide resources and links to live reference help to assist students in their work. This place would be different from Blackboard because professors would not be able to review students' discussions.

Figure 4: Academic Library 2.0 Concept Model, Detailed



In the more detailed version of the model (Figure 4), the boundary between physical and virtual has vanished. Furthermore, this model includes interaction types as well as places. Instead of focusing on exact tasks such as shaking hands (physical) or commenting (virtual), this model looks at interactions from a broader prospective. However, the basic goal is to facilitate thoughts about how to design virtual and physical places according to the types of interpersonal interactions our patrons will be having in those environments. Worth noticing is that all of the interactions mentioned occur in both the physical and virtual places. Furthermore, there soon will be more places

inhabiting both physical and virtual. This would include the example above of online group study rooms.

Now that the place of Web 2.0 in students' lives has been introduced, it is possible to pursue more specific inquiries into how Web 2.0 concepts and services can be applied in academic libraries.

Harnessing Collective Intelligence to Serve Local Needs

Not only are undergraduates power users of Web 2.0 services, but academic libraries still hold nearly a virtual monopoly over providing their required academic information needs. Furthermore, professors and graduate students remain similarly dependent on libraries to provide research materials. Even though some tools like Google Scholar and Google Books offer alternative routes to library materials, academic libraries provide collections and services customized to the unique needs of their institution. How then might Web 2.0 concepts and services be employed to serve local students and researchers?

One of the key concepts of Web 2.0 is that of creating unique datasets through user contributions. What local datasets could be mashed-up? What local datasets could be collected from library users? While Amazon is way ahead of libraries in collecting general book reviews for in print books, academic libraries hold many obscure out of print materials that might benefit from user reviews and commentary. Furthermore, might there be user contributed reviews, tags, and commentary that are only applicable locally?

One dataset on which academic libraries hold a monopoly is local academic data. For example, it would be possible for libraries to integrate complete lists of what

materials are being used for which classes into catalog systems. Additionally, data on what classes students are enrolled in, their syllabi, and assignments could be integrated. With this data, automatically generated suggestions about what resources might be helpful could be offered to a student once they log-in. It is not without reason to imagine the system using this data to anticipate upcoming assignments and offer resources accordingly. Following the Web 2.0 model, data could also be collected on students' behaviors in the catalogs. As courses are repeated, the system might learn what resources work for certain assignments and offer a suggestion such as, "In the past other students studying this topic have looked at these resources." Even better, if students provide ratings and reviews on resources, the system might be able to suggest, "Other students have found this item useful when researching this assignment." All of this data is unique to an individual institution making this data uniquely available to academic libraries. Along these lines, students could tag items with course numbers, assignment titles, or professors' names. Of course all this would be built on top of existing data unique to that library. These suggestions need not be limited to Catalog records, but could grow to include databases, e-journals, and even individual articles if vendors could be convinced to allow each institution to annotate items with local information.

One major issue that is brought up when discussing this type of service is privacy (Litwin, 2006). Any usage or sharing of patron data would need to be opt-in allowing patron granular level controls of how their data is used. This would need to be accompanied by appropriate information literacy instruction in privacy, identity, and intellectual property. However, this instruction is particularly important to assist students with their interactions with these services outside of the library.

Effects of the Read/Write Web on the Academic Environment

The preceding discussions demonstrate how many implementations of Web 2.0 concepts and services are dependent on providing users with read/write capabilities. A few of the cultural ramifications of this will now be discussed. One way to examine this is by looking at the effects of the Read/Write Web on scholarly publishing.

Traditionally, excluding study spaces, academic libraries expected patrons to use the knowledge they gained from the library to assist with writing projects that occurred outside of the library under established editorial methods. Eventually, this knowledge would trickle back in through traditional media sources such as journals and books. One way to look at the read/write web in relation to publishing is that it has accelerated this process. Now it is possible for readers to feed their knowledge back into the system in real-time.

While academic libraries have always been places of reading, Academic Library 2.0 is a place of both reading and writing. However the process always recognized patrons would write their ideas down and that they would eventually reenter libraries as part of the scholarly and historical record. Furthermore, librarians have always trusted that the majority of their users strive to distinguish that which is good and true. This is the foundation of the principles of democracy, academic scholarship, and intellectual freedom. However, Academic Library 2.0 demands a more explicit trust in the majority. Librarians must continue to trust that most readers are curious, intelligent and compassionate. The only difference is that the evidence of these attributes will be created and stored on our servers immediately and without editorial control. An example can be used to explain why this trust must be more explicit in Library 2.0.

It has always been easier to put hate group propaganda in the stacks than it has been to host hate groups in meeting rooms because the first can be obviously lost among the true and good arguments around it. In fact, it is only noticed when someone searches for it. In the meeting room or on a library hosted blog, that hate speech is much more obvious and thus harder to ignore. This explicit trust necessary for Library 2.0 is rooted in the principles of academic scholarship and intellectual freedom. These ethics encourage librarians to have faith that if any such bigotry is posted to a political discussion hosted on a library blog, it will quickly be drowned out by the voices of more responsible patrons. Moreover, those patrons will cite other sources on the web and in our collections. They might even make a compelling enough argument that the minds of a few lurkers are changed. This same principle underlies Wikipedia and, if user contributions are to be accepted into library systems, this principle must be accepted by librarians.

This is what intellectual freedom is all about. This is what libraries have always been about. Web 2.0 has simply accelerated the process. In this way Library 2.0 speaks to some of the best of traditional library values, and, in so doing, keeps the library at the forefront of defending intellectual freedom.

Academic Library 2.0

Now that some of the primary cultural, environmental, and methodological ramifications of Web 2.0 on academic libraries have been introduced, a synthesized view of what Academic Library 2.0 would look like will be proposed.

What would such a system look like when fully implemented? Patrons would have a single logon to a central account where they could manage all of their interactions

with research materials. On day one, a student's course information would be loaded into the system, along with the syllabi for all of his or her classes. The syllabi would provide links to both required and suggested materials in the OPAC, databases, school bookstore, and Amazon.com. Each class would have links to items tagged by students and faculty with that course number. There would also be links of items tagged by students with the professor's name. Furthermore, each assignment that was used in past semesters would have links to supplementary materials both students and faculty had tagged as useful for that assignment. While researching, students and faculty would be able to annotate whole records or articles, as well as individual pieces of records. They would be able to comment, discuss, tag and review items. This would be done across the OPAC, databases, and the open web. Their central account would provide them with access to all of their notes, as well as a tag cloud. When browsing, other people's annotations could be turned on and off at will.

Students and faculty would have granular privacy controls that would allow them to keep all of their information private, share it with just friends, just students, just the campus community, or the public. Additionally, students and faculty would be able to use a pseudonym when sharing. Of course, some usage guidelines would be in place to prevent such egregious abuses as slandering another member of the community.

Students and faculty would be able to establish private working groups where they could share, discuss, and annotate items both asynchronously and synchronously through discussion boards, chat software, co-browsing, blogs, wikis, or project management software. Of course, librarians could be summoned into personal or group workspaces to assist with the research process.

All of this data would be exportable in a standardized format and be the intellectual property of the contributors. This would allow transfer of information between this and other systems as well as allowing students and faculty to take their information with them when they leave the University or to delete old items from public view. An API would also be available to allow students and faculty to develop mashups of library system datasets and other datasets.

As mentioned above, people would be able to establish a friend network similar to social networking software like Facebook. Ideally this would be standardized across campuses allowing collaboration among students and faculty at different institutions. Possibly, this could be automatically generated through pulling data from the Facebook API or a similar existing network. A built in RSS reader would enable students to pull in data from various sources such as a friend's favorites or new recommended materials. This would present students with a snapshot of what is occurring in their areas of study.

Collected data would be analyzed to determine trends and patterns and the system would be adjusted accordingly. Among other things, this would include consistent updates to the interface, search algorithms, and recommendation systems. This data could also be used to detect trends in research habits and develop appropriate collection development strategies. This would be especially effective if data were pooled at a national level.

Information literacy classes would instruct students and faculty in the use of these and other Web 2.0 services. Instruction would also teach students about responsible content creation. This would include teaching them about intellectual property so that they could maintain appropriate control over their contributions to various services and so

that they can remix others' data legally. It would also include instruction on issues of privacy and how what students create online can be connected to their identity and affect their life in the physical world. Instruction would explain how to evaluate and contribute to non-traditional resources such as Wikipedia.

As increased familiarity and usage of these tools begins to have a greater effect on habits of face to face communication, the boundary between physical space and virtual space will become blurred. Some physical spaces will have a more modular structure to mirror the online work environment. Spaces will be designed for collaboration by providing tools such as tablet PCs, smart boards, and their descendants. All web services will be compatible across devices, including cell phones and handheld devices. Notifications and communications will be received through RSS, texting (SMS), or any other means the patron desires.

The above describes just one possible end product to which a pursuit of Academic Library 2.0 might lead. It is of course important to develop such a system gradually by adopting those services that are most appropriate to a given library's users and budget restrictions. Asking the core questions established in Chapter 4 should provide a guideline for choosing what new services should be developed when.

Chapter 6: Conclusion and Future Work

This paper proposed a definition of Library 2.0 grounded in its roots in Web 2.0. Then the core concepts and methods of Web 2.0 were introduced. From these, a general method was proposed for determining the effects of Web 2.0 on libraries. This methodology was then applied to the academic library setting and a picture of Academic Library 2.0 was developed.

As was mentioned in the introduction, this paper is part of an ongoing conversation on the Web, at conferences, and in the professional literature. How does this paper fit into the discussion? First, it presented a general theory and general methodology for determining what Library 2.0 services need to be developed. Second, it began to apply this method to academic libraries.

For future work, portions of this paper will be edited and inserted into an Academic Library 2.0 wiki. This will provide the core background for such a resource. Additionally, the methodology will provide the structure for some future articles. A section of the wiki will be designated for each of the four types of effects and articles will be proposed according to each question combination. Because the effects of Web 2.0 differ among cultures, different sections will be set up for different nationalities to highlight work being done outside of United States. Of course other articles can be added as appropriate.

This will allow portions of this paper to be updated by a community of practitioners as new developments arise. Furthermore, it will establish the foundation of

a resource and community where practicing academic librarians can brainstorm ideas and track one another's progress in reaching the goals of Academic Library 2.0.

Acknowledgements

Many thanks to my advisor Dr.David Carr for his guidance and patience. Thanks also to Michael Stephens his helpful comments.

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